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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/675,267	09/29/2000	Ivan Chow	Sprint IDF 1421 (4000-012	1016

7590 05/05/2004

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EXAMINER	
ALI, SYED J	
ART UNIT	PAPER NUMBER
2127	5

DATE MAILED: 05/05/2004

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	**Application No.** 09/675,267	**Applicant(s)** CHOW ET AL.	
	Examiner Syed J Ali	**Art Unit** 2127	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *18 March 2004*.

2a)☒ This action is **FINAL**. 2b)□ This action is non-final.

3)□ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-15* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)□ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1-15* is/are rejected.

7)□ Claim(s) _____ is/are objected to.

8)□ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)□ The specification is objected to by the Examiner.

10)□ The drawing(s) filed on _____ is/are: a)□ accepted or b)□ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)□ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)□ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)□ All b)□ Some * c)□ None of:

1.□ Certified copies of the priority documents have been received.

2.□ Certified copies of the priority documents have been received in Application No. _____.

3.□ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) □ Notice of References Cited (PTO-892)

2) □ Notice of Draftsperson's Patent Drawing Review (PTO-948)

3) □ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date _____.

4) □ Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____ .

5) □ Notice of Informal Patent Application (PTO-152)

6) □ Other: _____.

DETAILED ACTION

1. This office action is in response to the amendment filed March 18, 2004. Claims 1-15 are presented for examination.

2. The text of those sections of Title 35, U.S. code not included in this office action can be found in a prior office action.

Claim Rejections - 35 USC § 102

3. Claims 1-13 are rejected under 35 U.S.C. 102(e) as being anticipated by Hollberg et al. (previously cited) (hereinafter Hollberg).

4. As per claim 1, Hollberg teaches the invention as claimed, including a method for a client application in a single-threaded environment controlled by a user to request and receive multiple messages asynchronously from a destination application, the method comprising:

the client application sending a first request to a software agent running in a single-threaded environment (col. 12 lines 5-12);

the client application sending a second request to a software agent prior to receiving a response to the first request from the software agent (col. 12 lines 15-32);

the client application continuing on in execution in its single-threaded environment prior to receiving responses to the first request or the second request from the software agent (col. 8 lines 60-61);

the software agent registering the first request and forwarding the first request to the destination application (col. 7 lines 44-53);

the software agent beginning to cyclically poll the destination application for a first response to the first request (col. 11 lines 27-30);

the software agent in between polling cycles registering the second request and forwarding the second request to the destination application (col. 9 lines 4-7);

the software agent beginning to cyclically poll the destination application for a second response to the second request, wherein such polling cycles in sequence with the polling for the first response to the first request (col. 11 lines 45-53);

the destination application generating the first response to the first request and forwarding the first response to the software agent in response to polling from the software agent (col. 13 line 66 - col. 14 line 11);

the software agent receiving the first response from the destination application, ceasing cyclically polling the destination application for the first response, and storing the first response associated with the first request, wherein such actions of receiving, ceasing, and storing occur in between the continuing polling cycles (col. 13 line 66 - col. 14 line 11);

the destination application generating the second response to the second request and forwarding the second response to the software agent in response to polling from the software agent (col. 13 line 66 - col. 14 line 11);

the software agent receiving the second response from the destination application, ceasing cyclically polling the destination application for the second response, and storing the second response associated with the second request, wherein such actions of receiving, ceasing, and storing occur in between the continuing polling cycles (col. 13 line 66 - col. 14 line 11);

the client application polling the software agent for the first response to the first request and the software agent responding by forwarding the first response from storage to the client application and deleting the first response from storage, wherein the actions of responding by forwarding and deleting occur in between the continuing polling cycles (col. 13 lines 44-52);

the client application polling the software agent for the second response to the second request and the software agent responding by forwarding the second response from storage to the client application and deleting the second response from storage, wherein the actions of responding by forwarding and deleting occur in between the continuing polling cycles (col. 13 line 66 - col. 14 line 11).

5. As per claim 2, Hollberg teaches the invention as claimed, including the method of claim 1, wherein the action of the client application of sending the second request occurs after the actions of the software agent of registering the first request and forwarding the first request to the destination application and of beginning to cyclically poll the destination application for a first response to the first request (col. 11 line 45 - col. 12 line 12).

6. As per claim 3, Hollberg teaches the invention as claimed, including the method of claim 1, wherein the action of the client application of sending the second request occurs before the actions of the software agent of registering the first request and forwarding the first request to the

destination application and of beginning to cyclically poll the destination application for a first response to the first request (col. 11 line 45 - col. 12 line 12).

7. As per claim 4, Hollberg teaches the invention as claimed, including the method of claim 1, wherein the action of the destination application of generating the second response to the second request occurs prior to the action of the destination application of generating the first response to the first request (col. 11 line 45 - col. 12 line 12); and

wherein the action of the software agent of receiving the second response from the destination application, and performing the actions of ceasing polling and storing related to the second response occur prior to the actions of the software agent of receiving the first response from the destination application, and performing the actions of ceasing polling and storing related to the first response (col. 11 line 45 - col. 12 line 12).

8. As per claim 5, Hollberg teaches the invention as claimed, including the method of claim 1, wherein the action of the destination application of generating the second response to the second request occurs after the action of the destination application of generating the first response to the first request (col. 11 line 45 - col. 12 line 12); and

wherein the action of the software agent of receiving the second response from the destination application, and performing the actions of ceasing polling and storing related to the second response occur after the actions of the software agent of receiving the first response from the destination application, and performing the actions of ceasing polling and storing related to the first response (col. 11 line 45 - col. 12 line 12).

9. As per claim 6, Hollberg teaches the invention as claimed, including the method of claim 4, wherein the action of the client application polling the software agent for the second response to the second request and the subsequent forwarding and deleting actions related to the second response to the second request occur prior to the action of the client application polling the software agent for the first response to the first request and the subsequent forwarding and deleing action related to the first response to the first request (col. 12 lines 14-32).

10. As per claim 7, Hollberg teaches the invention as claimed, including the method of claim 4, wherein the action of the client application polling the software agent for the second response to the second request and the subsequent forwarding and deleting actions related to the second response to the second request occur after the action of the client application polling the software agent for the first response to the first request and the subsequent forwarding and deleting actions related to the first response to the first request (col. 12 lines 14-32).

11. As per claim 8, Hollberg teaches the invention as claimed, including the method of claim 1, wherein the action of the client application polling the software agent for the first response to the first request and the subsequent forwarding and deleting actions related to the first response to the first request occur prior to the actions of the destination application generating the second response to the second request and forwarding the second response to the software agent and prior to subsequent actions of the software agent and of the client application involving the second response (col. 12 lines 14-32).

12. As per claim 9, Hollberg teaches the invention as claimed, including the method of claim 1, wherein the destination application is resident on a server remote to the client application and to the software agent (Fig. 1, elements 80, wherein the remote managed objects are shown to be on a remote server, and connected to the application 10 through a communication infrastructure 50); and

wherein the actions of the software agent of storing the responses received from the destination application stores such responses on a server local to the software agent (Fig. 1 elements 35, wherein the local event queues 35 are where responses are stored while awaiting processing, and are local to the proxy agent, i.e., software agent, 30); and

wherein the actions of the software agent of responding by forwarding the responses from storage to the client application forwards such responses from storage on a server local to the software agent (Fig. 1, elements 35, arrow [3], wherein the responses are forwarded from the local event queue 35 to the application 10 through via communication arrow [3]).

13. As per claim 10, Hollberg teaches the invention as claimed, including the method of claim 9, wherein the software agent is resident on a server local to the client application (Fig. 1 element 30, wherein the proxy agent, i.e. software agent, is local to the application 10); and

wherein the actions of the software agent of storing the responses received from the destination application stores such responses on a server local to the client application (Fig. 1, elements 35, wherein the responses to from the destination applications are stored in event queues 35 while awaiting processing); and wherein the actions of the software agent of responding by forwarding the responses from storage to the client application forwards such responses from storage on a server local to the client application (Fig. 1, elements 10, 35, arrow [3], wherein the forwarding of responses goes from event queue 35 to application 10 via communication arrow [3], all of which occurs on the same machine).

14. As per claim 11, Hollberg teaches the invention as claimed, including the method of claim 9, wherein the remote destination application comprises a destination server application (Fig. 1 element 80, wherein the managed object 80 is the remote application) and a destination client application which manages requests to and responses from the destination server application (Fig. 1 elements 60, 70, wherein the XMP service handles communication between the managed object and the proxy agent); and

wherein the actions of forwarding the requests to the destination application comprise forwarding the requests to the destination client application (Fig. 1, elements 70, 80, wherein the requests are forwarded to the managed objects via the agent kernel 70); and

wherein the actions of the software agent of cyclically polling the destination application comprise cyclically polling the destination client application for the responses to the request (col. 11 lines 27-32); and

wherein the actions of the destination application forwarding the responses to the software agent in response to polling from the software agent comprise the destination client application forwarding responses to the software agent (Fig. 1, wherein communication is shown that allows the response from the managed object to be passed forward to the proxy agent).

15. As per claim 12, Hollberg teaches the invention as claimed, including the method of clam 1, further comprising:

the client application, in conjunction with sending a first request to the software agent, sending a command to register a callback associated with such first request (col. 13 line 44 - col. 14 line 32);

the software agent, in conjunction with the actions of receiving the first response from the destination application, ceasing cyclically polling the destination application for the first response, and storing the first response associated with the first request, further takes the action in response to the callback of notifying the user that the first response has been received (col. 13 line 44 - col. 14 line 32).

16. As per claim 13, Hollberg teaches the invention as claimed, including the method of claim 12, wherein the command to register a callback comprises a command resulting in instantiation of a callback object associated with the software agent (col. 13 line 44 - col. 14 line 32); and

wherein the action of the software agent of notifying the user comprises the callback object responding to the storage of the first response associated with the first request by notifying the user that the first response has been received (col. 13 line 44 - col. 14 line 32).

Claim Rejections - 35 USC § 103

17. Claim 14 is rejected under 35 U.S.C. 103(a) as being unpatentable over Hollberg in view of Chang et al. (previously cited) (hereinafter Chang) in view of Burns (previously cited).

18. As per claim 14, Chang teaches the invention as claimed, including the following limitations not shown by Hollberg:

the method of claim 12, wherein the action of notifying the user that the first response has been received comprises sending a pop-up to the user notifying the user (col. 4 lines 12-23).

19. Burns teaches the invention as claimed, including the following limitations not shown by Hollberg or Chang:

the notification of the user is done without interrupting the thread of execution of the client application (col. 4 line 63 - col. 5 line 21).

20. It would have been obvious to one of ordinary skill in the art to combine Hollberg with Chang since the use of pop up dialogs allows the immediate notification to the user that an event has occurred. Particularly in the case where the event cannot be immediately processed, the pop up would allow the user to be aware of the fact that a response has been received and will be serviced shortly. Additionally, it would have been obvious to one of ordinary skill in the art to add Burns to the combination of Hollberg and Chang since in circumstances such as when the client application is executing a high priority task, it may be critical that the task finish completion before other processing is done. Specifically, it is well known to assign priorities to tasks within a system. If a determination were made that the currently executing task is of a higher importance than the task that is awaiting a response, it would be most beneficial to continue processing the current task to completion before servicing the response.

21. Claim 15 is rejected under 35 U.S.C. 103(a) as being unpatentable over Hollberg in view of Chang.

22. As per claim 15, Chang teaches the invention as claimed, including prior art that teaches the following limitations not shown by Hollberg:

the method of claim 12, wherein the action of notifying the user that the first response has been received comprises notifying the client application that the first response has been received and the client application interrupting its thread of execution to notify the user that the first response has been received in response to the notification from the software agent (col. 5 lines27-65).

23. It would have been obvious to one of ordinary skill in the art to combine Hollberg with the prior art shown by Chang since in cases where the incoming notification is in response to an urgent request, or simply of a higher priority, the processing of that response should occur as soon as possible. By interrupting the thread of execution to process the request could resolve data dependencies that other blocked requests may be waiting for, or other such circumstances that require the immediate processing of a reply. Thus, interrupting the thread such that the response is handled immediately is beneficial in the sense that urgent requests do not have to wait once a reply is available.

Response to Arguments

24. Applicant's arguments filed March 18, 2004 have been fully considered but they are not persuasive.

25. Applicant argues on page 9, "*Hollberg fails to teach, disclose or even suggest Applicant's novel solution of enabling asynchronous behavior to be executed in parallel within a single-threaded environment by breaking-up work with a software agent.*" Applicant adds, "*Hollberg discloses developing the management applications and object-oriented programming interface [OOI] in C++ for a Unix operating system, which are system that operate in a multi-threaded environment.*"

26. Examiner respectfully disagrees. Hollberg directly addresses the issue of asynchronous requests within asynchronous methods provided by the OOI. A proxy agent handles these requests by generating objects that encapsulate the request and asynchronously process and receive the request. The agent cycles through various methods, including wait( ) and poll( ) methods that asynchronously receive data related to the completion of processing. Thus, it is clear how Hollberg does indeed address enablement of asynchronous behavior. Regarding Applicant's argument that Hollberg does not support a single-threaded environment, Examiner also respectfully disagrees. Applicant alleges that Hollberg is developed for use in a Unix operating system, yet Hollberg makes absolutely no mention of the Unix operating system or multithreading. The passages cited by Applicant (col. 2 lines 12-61; col. 10 lines 38-42) are not related to multithreading or Unix in any sense. Rather, the requirements for the OOI design are presented. While it may be well known that the Unix operating system supports C++ class objects and interfaces, Unix is not the requisite environment for using these classes. Hollberg's

explicit reference to the OOI being designed as a single-threaded environment is considered sufficient for the limitations being argued by Applicant (col. 13 lines 44 - col. 14 line 11, "The OOI is single threaded, therefore call-backs are invoked only during wait( ) or poll( ) calls and not while the application is processing"). Clearly, Hollberg seeks to break up the asynchronous requests into several processing stages, all of which are handled by a proxy agent, as claimed, in addition to requiring that the OOI be implemented in a single threaded manner.

27. Applicant argues on page 10, "*the Hollberg reference disclosure that the OOI may be a single-threaded program fails to teach, disclose, or even suggest the client application and/or the software agent running in single-threaded environment.*" Applicant adds, "*[s]ince Hollberg discloses both the application running multiple threads, and the application and OOI running in a multi-threaded environment, Applicant respectfully submits that Hollberg fails as an anticipatory reference since Applicant's Claim 1 provides for the client application and software agent running in single-threaded environments.*"

28. The arguments presented herein are substantially similar to those presented and discussed above in paragraphs 25 and 26, respectively. Hollberg does not indicate that the application runs multiple threads, nor does Hollberg disclose a multi-threaded environment. Rather, Hollberg explicitly states that the application is single threaded, as discussed above in paragraph 26.

Conclusion

29. **THIS ACTION IS MADE FINAL.** Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the mailing date of this final action.

30. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Syed J Ali whose telephone number is (703) 305-8106. The examiner can normally be reached on Mon-Fri 8-5:30, 2nd Friday off.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Meng-Ai T An can be reached on (703) 305-9678. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

Syed Ali
April 30, 2004

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